Commissioner Picker Comments at the Start of the New Year: 1/19/2017

Welcome back

I hope that everyone had time to spend with your families and visit with friends and get some rest. During our last meeting in December, I promised you that we would have a busy year in 2017.

Today, I want to welcome two new Commissioners, remind ourselves of some of the high points of recent progress, and then talk about some areas for focus in the upcoming year: improving key CPUC business systems, our emerging role in building the infrastructure to drive greenhouse gas emission down in California, and managing the pole and conduit conveyance used for electricity and telecommunications for safety and accessibility.

For the past two years, we, as an agency, have spent much effort to rebuild and prepare for future. I'll point to much progress in revitalizing and strengthening our safety programs here, outline the emergence of a Commissioner driven accountability process for the Commissioners and for the organization, and comment on the ways that the Executive Director is building changes in the CPUC culture.

The Legislature has given us some specific direction on expanding and decentralizing the agency outside the Bay Area, tightened ex parte communications rules at the same time that they made our Bagley-Keene sunshine rules more consistent with other state agencies, called for studies on what functions that the CPUC should consider shedding and opened up a pilot for a more modern quasi-legislative proceeding. The Governor has bargained salary increases for most CPUC staff, and added to our budget and workforce in other meaningful ways.

Commissioners meet an extra day before our business meetings to discuss the business of the organization as well as to develop accountability for the Commissioners and for the organization. The Commissioners sitting as a body in these public meetings review the CPUC budget and get briefed on audits. We've developed a new set of tools for Commissioner accountability, including a job description and a code of conduct that we must review and individually sign each year. These documents acknowledge what the law requires, but goes further in some key aspects. But we also work together as a body to evaluate the executives who directly report to us – the Executive Director, the Chief ALJ, the General Counsel and the Internal Auditor.

We've set expectations as how we can measure progress in our strategic directives, and each of the Divisions are now developing work plans that they'll use to meet those expectations. The Commissioners will review progress toward each of the strategic directives and key measures every year or even more frequently, as necessary. That means that organizational planning and measuring progress is constant and continuous.

Many of the measures we'll use to evaluate our progress will apply to more than one division, and some reporting will cross traditional boundaries. For example, a monitoring report taking place in our Finance and Administration Committee focusing on our Compliance and Enforcement strategic directive (SD-7) should involve some quantitative discussion of the numbers of citations and actions by the Safety and Enforcement Division, the Consumer Protection and Enforcement Division, along with some review of major enforcement litigation from the Legal Division. The monitoring discussion on Climate Change (SD-8) should involve reporting by Energy Division on overall reductions in GHG emissions year to year by all CPUC activities, then by industries and regulated entities who report on GHG reductions and then a narrative discussion on how our programs are working.

Not all our problems result from failure to observe ex parte communications rules, or from our relations to regulated entities. Many have stemmed from organizational inertia over past decades and getting out of step with other state business practices. Now we are making progress toward new effectiveness in these areas as well. These are not simply reforms – again, they are also efforts to modernize and strengthen the agency.

In the last two years we've added new staff and leadership to the Safety and Enforcement Division to strengthen our capacity for inspections, audits and investigations that enforce our hard and fast standards, developed a new annual safety plan, held our first two Safety En Bancs (one on pole safety, and more about that later), made continuous improvements to our citation programs that give timely actions and more teeth to our enforcement efforts, built on earlier policy decisions to measure and track how energy utilities set priorities for their spending and how that should add to safety, created a new office of the safety advocate to pose demands for safety spending in rate cases and to continually challenge the CPUC to develop better and stronger safety tools, and are conducting our first corporate governance audit of a utility's culture. We have a new Deputy Director for Safety, require each proceeding to determine that it addresses safety issues and in a change to our Rule 2.1, require Commissioners to attest to that attention.

Furthermore, we are constantly making efforts to work better with outside agencies who have overlapping safety authority over activities conducted by the utilities we regulate. We are developing agreements with the Office of Emergency Services and with the Division of Oil, Gas and Geothermal Reserves, but paper is not enough. One clear example is the oversight of underground gas storage in geologic basins. The CPUC enforces the rules set by the Federal Pipeline and Hazardous Safety Administration which cover pipelines and above ground infrastructure. We have general safety responsibility for these utility storage sites, but not the expertise or enforceable standards for wells that operate as deeply as a half mile or more below the surface. We must change so as to be able to work with seamlessly other state agencies to prevent environmental disasters like the breach at Aliso Canyon. That means that our safety culture must continue to change to address different types of challenges.

One sign that it's catching on: just as I've been talking to SED leadership and the Legal Division about the need, the Information Technology staff separately figured out the same great opportunity and developed a smart phone app that can snap a photo of a safety violation, tag it with a geolocation, take information from the phone owner, and then upload it to the CPUC's server. We still need a set of online tools that can open a case file here, refer it to the appropriate people for review and for action, and track and report the action taken on the safety problem.

Safety culture is not just what you think, although being conscious of your work is vital, but culture is what the organization choses to do and how it does that. When the IT department understands independently the same need and starts to move along the same path as the Safety and Enforcement Division, it's an indication that the organization as a whole is starting to make safety part of what we do. That's safety culture.

And we will always seek improvement in our safety efforts, and constant improvements on safety at the entities that we oversee. Having the types of organizational structure, having clear common conscious understanding of how those parts of the CPUC work together to share learning and practice – that's a safety management system.

These kinds of challenges aren't always comfortable to live with, but acknowledging and acting is necessary if we are to survive, to regain trust, and to be the organization that we all want to work for.

We're responding to a diverse set of emergent forces: how to build work arrangements that extend beyond the silos defined by our branches and divisions to becoming more adaptive and collaborative, expanding beyond our centralized facilities units to a more decentralized organization that exists not primarily in San Francisco, but across the state, and moving to a state where we are not as exceptional and isolated in our work, but increasingly part of implementing the policies of the State of California and sharing the work with other state agencies.

The Executive Director and many of us here in the room, and elsewhere in the building and in our regional offices, are pushing ahead to help us develop a new organizational culture, a new set of operating tools and behaviors and a new sense of ourselves. He kicked off a organization wide discussion on how we describe our values – the qualities that we expect of ourselves as we conduct our work and engage with each other and the world around us. About 1/3 of the CPUC staff participated in one or another of the workshops. Each workshop was facilitated by line staff and supervisors across the organization. They, your colleagues – not executives, not consultants -- stood in front of us and lead us through this self-examination. Now we regularly honor specific staff for acting as exemplars of these values in their works. But, I want to call attention to the ongoing leadership of the facilitators of those first values workshops. Many of them took the lead in organizing the Pop-Up Learning workshops last year, sharing their specific expertise. Now they are working together to develop organization wide initiatives to promote our values and our efforts to become constantly more effective, and to learn as an organization as we go forward. Leadership is emerging at the bottom too, not just at the top. Tim Sullivan is seeking to make us more conscious and aware of these kinds of opportunities through his

adaptive leadership workshops. There's more, including a new Compliance Office to help design programmatic responses to external audit findings and our own formal internal expectations, but I don't mean to speak for the Executive Director here.

As I've stressed, we have more to do In each of these tasks, and should expect continuous efforts to make improvements and changes, not just in safety or in modernization and reform, but also in our work on water, on transportation, in our public outreach and communications, in our utility audits.

I want to point to some areas in our business systems that need specific focus in the next year, specifically in contracting and in human relations. We've received a number of audits of our contracting programs, and we're way behind statewide expectations. This has been a focus of the new Compliance Division, but the challenges include hiring new staff, training them to understand and observe statewide rules for contracting, not our own historic practices, and requires similar understanding and preparation from the Division staff proposing consulting contracts. One example: while the CPUC is a leader in contracting diversity in our oversight of utility spending, we are laggards in diversity within our own contracting. This is not to criticize the staff in the contracting unit; I spend part of every day that I'm here down in San Francisco in a cubicle on the second floor where I answer emails and try to catch up on my writing and reading. I can see how hard they are working to respond to the challenges.

But success on our own diversity contracting will require us all to act differently – a shift in culture. We'll need to do what the utilities do to help meet their diversity goals. More outreach, more discussion with potential contractors on how they can share their work with diverse subcontractors. This will require divisions to think and analyze how they will approach this task. If the regulated utilities can do this – and they are more than meeting the challenge – so can we.

Similarly, we face a number of new challenges human relations. We're hiring almost 300 new staff this year. That's daunting under any circumstances. We need to expand our presence in other parts of the state, both by legislative direction and in order to hire capable staff in markets where the cost of living – especially housing -- makes it possible for our new employees to pay off education loans, find affordable housing, and maybe support a family. Our past success in hiring world class staff here in the Bay Area is unlikely to prove up to the new challenges. I know that the Executive Director and his team are aware of the needs and are working on it, but we all are seeing the obstacles that arise in our work, and if nothing else, we should all be aware of how essential improvements and support to these two business systems are to the CPUC's success.

Still, given where we are in this time, we need to forge forward on couple of areas where we may not see the new national leadership making progress toward our goals. I think we are expected to provide some measure of that national leadership that will soon be missing. Here are

two key infrastructure issues: poles and conduits, and the new infrastructure to reduce greenhouse gas emissions from not just from electricity generation, but other energy uses.

Last spring, we held a Safety En Banc to discuss the 4 million wooden poles that carry electric cables and a variety of telecommunications wires and equipment on them. Utilities have fallen behind in replacing poles – they aren't glamorous, no consumers are demanding that we develop tariffs so that they can purchase and manage their own poles in the own back yard, and despite their importance, most people just wish they would go away. Overall, they are aging – it's easy for utilities, for staff and for ratepayer advocates to pass on pole expenditures when no one can agree on what is the appropriate lifespan for a wooden pole (no moving parts) and when the economy is down. Many have too much equipment on them, and the overloading can topple them in a wind storm, cutting communications and posing a fire or electrocution risk. Conflicts between utilities create hazards – there's evidence that a cable company wire that came loose in a windstorm whipped over electric wires on the same pole, causing a short and catastrophic fire in San Diego. Failure to observe clearance rules places line workers at risk.

But, despite image problems and the hazards, wooden poles offer enormous value to consumers per dollar that they cost, carrying electricity (now two ways, from central station power sources and the other direction from distributed energy resources), fiber for utility high speed broad band providers (like Google Fiber, but also AT&T and Verizon fiber for their VOIP and internet services). Soon, the new 5G wireless smart phone will be on poles across California. Back in the 1990's Congress was expecting this explosion of demand for wooden poles and for conduit for all these utility services and declared them to be "public conveyances" and required pole owners to provide equal opportunity access to new technology providers.

Last fall, Commissioner Peterman issued her telecom competition analysis. In most densely populated urban areas, most consumers have a choice of phone service providers, although the ownership of the fiber that supports those providers is concentrated. In rural areas, the analysis found that service is much less competitive. And access to poles to provide more competition in either urban or rural areas is often constrained and competitive in itself. The proceeding called for an examination of how access to poles and conduits may be restraining new high speed broadband access and customer choice.

For both electricity and for communications, the wooden pole or the underground conduit may be the remaining key natural monopoly in most parts of the state. That's what we do – regulate monopolies, ensuring fair rates, safe infrastructure and universal access to service.

But we discovered in the Pole Safety En Banc last spring that there is no consistent statewide census of this key infrastructure. Despite their importance and their hazard, we don't know where poles are, who owns each one, what is on it, what the age of the pole is, or condition of the pole or the attachments on them. Much of the pole infrastructure is managed by joint pole authorities. While we set their rules, testimony at the Pole Safety En Banc revealed that the associations don't effectively enforce our General Order 95 for safety, or keep consistent information

and don't generally make it available publicly. The Commission will consider a statewide census of poles and underground conduits, and what kind of database we need to consider in order to provide oversight to this natural monopoly in a follow on to her competition analysis.

California has been successful at cleaning up our electric industry. When you look at where carbon emissions come from that threaten us with climate change, roughly 20% comes from the electric industry, 30% comes from the use of natural gas in homes, business and industry (with some overlap for electric generation) and 40% comes from transportation. The legislature has already ordered us to begin providing the infrastructure to fuel transportation with clean electricity, and the Governor has made it clear that he expects us not only to continue cleaning up electricity, but to provide other cost-effective infrastructure to reduce GHG emissions from other energy uses as well – for example, by doubling energy efficiency as a means to reduce natural gas use.

That means that clean electricity comes first in this new loading order to grind carbon out of California's economy.

Overall, we need to focus our attention on GHG reduction, which is the goal, and not strictly on tactics that help us to achieve that goal. Renewables and energy efficiency are tools that help us get to our 2030 and 2050 goals. But they are not our only tools, they cannot provide all our needs, and they are not an end in themselves. Furthermore, the experience of China and Germany is that fossil fuel power used as backup for the erratic and variable patterns of renewable generation may also slow progress on GHG emissions. We need to emphasize the goal, and continually seek new tactics, and should not rely on a narrow and arbitrary range of technologies that we've certified – often to satisfy interest groups, not because of their efficacy in carbon reduction – as "renewable."

Renewables are winning. It sure looks like there is no turning back to coal. Northern Plains wind contracts are priced at 3 cents per kilowatt hour and some Texas wind contracts are now as low as 2 cents per kilowatt hour. Desert solar projects are winning contracts at 4 cents per kilowatt hour. A new gas plant contract will price at about 5 cents per kilowatt hour. Renewable power has become a competitive commodity. SDG&E says that they will be offering 38% renewable power this year, and PG&E is closing on 33% this year. Because of the declining costs of renewables and because they have been easier to site and build than many policy leaders thought, they are competing head to head with new coal and gas power plants. When we close down aging natural gas plants here in California, we are replacing them only with natural gas peakers, used only a few hundred hours a year to provide peak power and to sure reliability. When the current 2,000 MW gas plant closes in Carlsbad, the new peaker will be far smaller – around 550 MW. Similarly, the 2,200 MW Moorpark plant, still in the CEC's siting process closes, the new plant will be far smaller – around 500 MW.

The electric grid is becoming more and more dynamic and variable. Our system for producing electric power (which requires many more elements than just producing energy) is a complex machine. We call it the grid – a static term - but it is becoming and intricate, dynamic and very ingenious engineering feat and is almost unrecognizable compared to the electric grid of the 1950's.

The electric system has grown and connected across the continent and our regional grid now locks together the entirety of Western North America, including Alberta, British Columbia and portions of Mexico. (Baja California has more high voltage connections to California than to the rest of Mexico). Increasingly, we are using – and providing electricity – across the region. Electrons tend to follow the topology of the transmission system in the grid, and don't much notice our political or policy boundaries. The grid's borders are the outlines of the transmission system and switches we use to change the pathways electrons can follow. And increasingly, our forms of electricity generation – wind and solar especially, follow the weather and the sun, and are highly variable, changing by time of day and the season, not the commands of system engineers.

New distributed grid tools help manage clean electricity and can reduce carbon emissions even more than renewables alone. Smart meters, building controls and powerful data tools offer flexibility as to when and how consumers use power – are becoming more and more valuable to grid managers and to consumers. The Federal Energy Regulatory Commission reports that eastern grid managers are using smart meters and smart grid controls to reduce industrial and retail power use for short periods of time across regional wholesale markets, and lowering demand during peak periods by as much as 6.5%. In the New England region, these demand response tools – in larger part from electric water heaters in a part of the US where natural gas has been expensive for years – allow grid managers to reduce electricity use by as much as 11 %. In California, much of our demand response comes about not primarily through markets, but by utility incentive programs. SMUD reports that their large scale pilot programs for residential users produced as much as 13% peak reduction, and as much as 38% on specific summer days for some groups of customers. These *demand response* programs avoid the need for expensive peak natural gas plants that are used primarily for backup when solar begins to wind down at sunset, and before wind plants spin up in the late evening.

Now we can add to that set of demand response tools the ingenious use of batteries and solar arrays—not just for energy, but also to avoid or defer expenditures for new grid hardware. Batteries, for example are being used not just to store bulk energy, but also for such grid needs as smoothing jittery solar and wind electricity that can damage sensitive electronics avoiding other expensive controls normally located in large substations.

Consumers are taking control and many want to meet their own energy needs. They have choices on how they use or how they obtain energy - through demand response programs that help them arbitrage daily differences in electricity supply and prices, distributed energy generation like rooftop solar and fuel cells, and through using various forms of storage such as lithium batteries or chilling water at night and storing the cold water mass so as to provide cooling during hot afternoons.

One important development is buyers pools like industrial "direct access" contractors, or retail community clean aggregators (CCAs) that are established by local governments. There are five operational CCAs and 15 more in planning. If all eligible cities in LA County participate in the

County's programs, Southern California Edison will lose 40% of their retail sales. San Diego City's proposed CCA would reduce SDG&E's customer base by 44%. PG&E, with most of the operating CCA's in their service area, expect additional loss of customer sales to CCAs, an additional 21% in 2017 alone.

Demand for electricity is dropping, and so are purchases of new renewables contracts by utilities. The CEC and investor owned utilities expect little or no growth in the use of electricity. On account of greater than expected success in siting, permitting and constructing renewable power plants in California, because of decreasing overall need for electricity and because of many customers who are now finding their own sources of electricity, we expect that utilities will not be buying new large scale contracts until perhaps 2024. The major exception here is where the CEC identifies some soft spot in the local grid during their energy forecasts, and we find that we need some new type of generation or electrical service (e.g. fast ramping natural gas back up generation) in order to maintain overall reliability.

The electric grid needs more than just energy to meet power needs and to ensure reliable electric service. The traditional utilities own more generating capacity than you would predict only on an annual average, so as to supply peak demand during periods of heaviest use (usually several weeks per year for 3 to 5 hours a day during summer heat storms). This peak capacity is a time-specific grid service that is not well-matched to our system of charging customers on a monthly average bill that totals the total megawatt hours over the month. There are other essential grid services that the investor owned utilities must supply to make the system work, as well: frequency regulation, load following and spinning reserves that provide voltage regulation. Wind and solar haven't been providing these resources, although we have pioneered some pilot programs to use smart inverters to allow groups of local rooftop solar arrays to provide an electronic replacement for these services, but with an accompanying reduction in the amount of energy that is provided from each roof top array . The CAISO just recently replicated these results for a large 300 MW photovoltaic power plant in the desert. When the grid operators are seeing the same solutions from innovative use of technology as we are in the local, something good is happening.

Investments in modernizing the local electric grid are increasing at the same time that purchase of new power is slowing. Most of the new distributed energy resources – whether energy efficiency, storage, demand response or generation – are located in the lower voltage distribution grid, close to consumers. This grid was designed for one way power from central generation resources, and must be rebuilt to meet the needs of a more dynamic flow from two directions. Furthermore, distributed energy resources placed carefully in specific locations can avoid (temporarily, at least) expenditures for new hardware such as transmission or substations.

Traditional utility business models are under stress from new technologies and new competition.

California's investor owned utilities have not owned power generation for over two decades (with the exception of massive legacy projects like hydro or nuclear). They simply pass along the cost for electricity. But all of their expenses, both for long lived infrastructure like poles and

wires for substations, and for meters, as well as staffing and for electricity are recovered in a rate structure that is primarily based on the volume of electricity sold to each customer

All of these customers still remain attached to the grid, using wires, transformers, substations, advanced grid tools and management, electrical services other than energy needed to keep the grid functional (load following and reactive power and so on), billing and customer service, etc. In order to adequately cover these costs, departing customers should also expect to pay another $20 to $25 each per month to cover grid (or fixed) charges. So, while customers who chose some form of alternative power service (Clean Community Aggregator, rooftop solar, Direct Access, etc.) should see these items deducted from the price they pay for electricity, the utilities must still find some way to recover their costs for providing them to departing customers. We have not yet settled on a full and accurate fixed cost price of grid services, although we will take that issue up later this year in our NEM 3.0 proceeding.

Some of these challenges are being addressed in existing proceedings like Distribution Resource Planning or the Integrated Resources Plan proceeding called for in SB 350. But we will need to start considering how to address other issues this year:

1. We should consider allowing customers to buy their electricity separately from their grid services. Provide more flexibility to customers to choose their power providers, who can provide them different tools, prices and opportunities they seek – so long as they reduce GHG emissions from the sources of generation. This could allow more competition between different clean technologies and bring about more innovation. But, we will need to resolve such issues as to how the new system will provide reliability, how we provide for the many customers who just don't have time to investigate choices or need a low cost electricity provider, or how to provide consumer protection against predatory marketing by customer electric providers.

2. We should investigate new models for compensating utilities for providing the remaining monopoly functions – providing wires, grid management, and billing services. Should we allow them to compete with third party providers – perhaps at arms-length from their monopoly wires service?

This year, we will start a series of workshops and hearings to begin discussing this new set of challenges. First up is Commissioner Peterman's En Banc on the CCA's set for February 1, and soon after a similar workshop on Direct Access programs for industrial customers. We should see a new charter for the Commissioner Committee on Modernization, which could provide a more regular forum for these discussions.

Many of us wonder if new leadership in Washington, DC will hamper us in our many endeavors. I think that it's even more a time and a reason for us to work hard, work well, fail productively, and show America how we can make progress regardless of rigid ideology and divisive partisan ship.

We have a lot to do. And I think we can do it very well.